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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,105	10/22/2001	Brent D. Lunceford	TERV:004USD1	1252

7590 10/04/2004
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EXAMINER

ROCCHEGIANI, RENZO

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/021,105

Applicant(s)

LUNCEFORD, BRENT D.

Examiner

Renzo N. Rocchegiani

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 21-23, 27-30 and 32-33 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,114,780 (Mercer et al.).

Mercer et al. disclose an electronic device module comprising a substrate (item 2) such as a printed circuit board (col. 3, lines 35-45 and col. 8, lines 44-55), an electronic device such as a chip (items 4a-d) connected to the substrate (col. 8, lines 44-55) and a fluorinated polymer encapsulant-protectively adhered about at least a portion of the at least one electronic device (col. 9, lines 40-49). The fluorinated polymer encapsulant comprises two or more layers of HFIP (col. 10, lines 45-55). Furthermore, an epoxy encapsulant is sandwiched between at least one electronic device and the fluorinated polymer encapsulant (col. 9, lines 20-30). Finally, the fluorinated polymer encapsulant comprises particles that affect its thermal expansion characteristics (col. 9, lines 50-55).

Because the fluorinated polymer encapsulant is made of the same material, it is inherent that it has the property of being reworkably removed with a solvent that would not affect the device.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,114,780 (Mercer et al.) in view of US Patent No. 5,359,208 (Katsuki et al.).

As stated in paragraph 2, all the limitations of these claims have been met except for specifying that the electronic device comprises an opto-electronic device module or a flip-chip and that the polymer is used as an underfill.

Mercer et al. disclose the formation of a variety of semiconductor device modules with interconnects and chips therein, wherein the fluorinated polymer may be used as an interlevel dielectric layer. (col. 3, lines 25-45)

Katsuki et al. teach the formation of chip connections on circuit boards wherein it states that the flip chip bonding is commonly used in the art and that opto-electronic devices may be formed with such connections. (col. 2, lines 55-67 and col. 3, lines 35-40, lines 60-65).

It would have been obvious to one with ordinary skill in the specific art to combine the teachings of Katsuki et al. to the invention disclosed by Mercer et al., since Katsuki et al. teach that flip chip technology is common in the art and since Mercer et al. disclose that the fluorinated polymer may be used in a variety of semiconductor devices.

5. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,114,780 (Mercer et al.) in view of US Patent No. 5,637,663 (Anolick et al.).

As stated in paragraph 2, all the limitations of this claim have been met except for teaching that silica is used as the particle to mix in with the fluorinated polymer.

Anolick et al. teach the use of silica to mix in with fluorinated polymers to modify the material properties. (col. 12, lines 1-10).

It would have been obvious to one with ordinary skill in the specific art to combine the teachings of Anolick et al. to those of Mercer et al., since Mercer et al. discloses the mixing of particles with the fluorinated polymer and Anolick et al. teach that silica is one such particle that may be used, and it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renzo N. Rocchegiani whose telephone number is (571)272-1904. The examiner can normally be reached on Mon.-Fri. 8:00 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571)272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2825

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Renzo N. Rocchegiani
Examiner
Art Unit 2825

A handwritten signature in black ink, appearing to read "Matt Smith", with a stylized, looping flourish at the end.

MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800